

III. REMARKS

1. Claims 1-17 remain in the application. Claims 1, 5, 9, 10, 12, 13, and 17 have been amended.

2. Applicants respectfully submit that claims 1-6, 9, and 13-16 are patentable over the combination of Mehuys et al. (US 5,537,432 "Mehuys") and Fox et al. (US 4,868,834, "Fox") under 35 USC 103(a).

2.1 The combination of Mehuys and Fox fails to disclose or suggest a cavity, continuously tunable in wavelength, comprising a second reflecting unit or redirection reflecting unit, being rotatable about an axis by at least 360 degrees for providing a continuous movement of the second reflecting unit or redirection reflecting unit along a circle path with respect to said grating, to continuously vary the optical path length of the cavity, as recited by claims 1 and 9.

The Examiner properly points out that Mehuys has no disclosure related to a second reflecting unit or redirection reflecting unit, being rotatable about an axis by at least 360 degrees.

Applicants respectfully submit that Fox fails to provide a cavity, continuously tunable in wavelength, that includes a second reflecting unit or redirection reflecting unit, being rotatable about an axis by at least 360 degrees for providing a continuous movement of the second reflecting unit or redirection reflecting unit along a circle path with respect to said grating, to continuously vary the optical path length of the cavity.

Fox does not have a cavity that is continuously tunable in wavelength. Fox discloses a low pressure CO₂ laser that rapidly switches among discrete wavelengths. A multifaceted mirror 22 rotates around 360 degrees but is used for an entirely different purpose. Different wavelengths are retroreflected according to a preselected angle of rotation off each face 22a of rotating mirror 22. At least two different and distinct wavelengths are retro-reflected from the gratings (see column 2, lines 54-63). Thus, Fox provides discrete wavelengths as opposed to continuous wavelength tuning, and is not capable of continuously varying the optical path length of the cavity.

Applicants respectfully submit that the proposed modification of Mehuys to include Fox would render the prior art unsatisfactory for its intended purpose. The combination of Mehuys and Fox would not result in a continuously tunable laser because the rotating scheme of Fox would simply extinguish the current laser mode.

Referring to MPEP 2143.01 V.:

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

At least for these reasons, independent claims 1 and 9 and dependent claims 2-4 are patentable over the combination of Mehuys and Fox.

2.2 The combination of Mehuys and Fox fails to disclose or suggest a cavity continuously tunable in wavelength, where at least one grating is arranged being rotatable along a circle path about an axis by at least 360 degrees for providing a continuous movement with respect to said first and second reflecting unit to continuously vary the optical path length of the cavity, as recited by claim 5.

Mehuys has no disclosure related to a rotatable grating. In Figure 2, Fox discloses a rotatable grating but the grating rotation is controlled to so that the laser emits two or more different wavelength pulses (see column 3, lines 1-13. Furthermore, as argued above, the combination of Mehuys and Fox would not result in a continuously tunable laser because the rotating scheme of Fox would operate to extinguish the current laser mode.

At least for these reasons, independent claim 5 and dependent claim 6 are patentable over the combination of Mehuys and Fox.

2.3 The combination of Mehuys and Fox also fails to disclose a cavity, continuously tunable in wavelength, where at least one element of a group comprising the first reflecting unit, the second reflecting unit, and the grating is arranged being rotatable about an axis by at least 360 degrees for providing a continuous movement of said element along a circle path with respect to at least one of the other elements to continuously vary the optical path length of the cavity, as recited by claim 13.

Mehuys has no disclosure related to any of a first reflecting unit, second reflecting unit, or a grating, arranged to be rotatable about an axis by at least 360 degrees. For the reasons

argued above, Fox fails to disclose or suggest any elements that rotate about an axis by at least 360 degrees for providing a continuous movement of said element along a circle path with respect to at least one of the other elements to continuously vary the optical path length of the cavity. Also as argued above, the proposed modification of Mehuys to include Fox would render the prior art unsatisfactory for its intended purpose.

At least for these reasons, independent claim 13 and dependent claims 14-16 are patentable over the combination of Mehuys and Fox.

3. Applicants respectfully submit that claims 7, 8, 10, and 11 are patentable over the combination of Mehuys, Fox, and Fink (US 4,862,468).

3.1 Claims 7 and 8 depend from claim 5.

Fink fails to disclose or suggest the features of claim 5 missing from the combination of Mehuys and Fox, that is, a cavity continuously tunable in wavelength, where at least one grating is arranged being rotatable along a circle path about an axis by at least 360 degrees for providing a continuous movement with respect to said first and second reflecting unit to continuously vary the optical path length of the cavity.

Fink discloses a switchable line selector for pulsed lasers that forces successive pulses to be on different and distinct spectral lines (see column 1, lines 7-11). A set of diffraction gratings are provided on the face of a rotating wheel. As the diffraction gratings each come into correct optical alignment, the laser is fired. Thus, Fink is incapable of providing a cavity continuously tunable in wavelength, and does not rotate at least one grating to continuously vary the optical path length of the cavity.

At least for these reasons, the combination of Mehuys, Fox, and Fink fails to render claims 7 and 8 unpatentable.

3.2 The combination of Mehuys, Fox, and Fink fails to disclose or suggest that said second reflecting unit and said grating are both arranged being rotatable along a circle path about an axis by at least 360 degrees for providing a continuous movement with respect to said grating to continuously vary the optical path length of the cavity, as recited by claim 10.

Mehuys has no disclosure related to any components arranged to be rotatable about an axis by at least 360 degrees. As argued above, Fox fails to disclose or suggest any elements that rotate about an axis by at least 360 degrees for providing a continuous movement of

said element along a circle path with respect to at least one of the other elements to continuously vary the optical path length of the cavity.

Fink, like Mehuys and Fox, fails to disclose or suggest a second reflecting unit and a grating, both arranged being rotatable along a circle path about an axis by at least 360 degrees for providing a continuous movement with respect to said grating to continuously vary the optical path length of the cavity. Fink does not continuously vary a cavity's optical path.

In the embodiment discussed above, there is no rotating second reflecting unit. Fink discloses a laser that fires as each one of a set of diffraction gratings are rotated into correct optical alignment. Thus, in this embodiment, there is no cavity continuously tunable in wavelength, no rotating second reflecting unit, and no second reflecting unit and grating rotated together to continuously vary the optical path length of the cavity.

In the embodiment of Figure 6, cited by the Examiner, a pulsed laser is directed to a rotating fold mirror assembly to each of a set of stationary gratings. Thus, the laser is pulsed and there is no continuous wavelength tuning. Furthermore, because the gratings are stationary, there is no second reflecting unit and grating rotated together, and no continuous variation of the optical path length of the cavity.

At least for these reasons, the combination of Mehuys, Fox, and Fink fails to disclose or suggest a second reflecting unit and a grating, both arranged being rotatable along a circle path about an axis by at least 360 degrees for providing a continuous movement with respect to said grating to continuously vary the optical path length of the cavity, as recited by claim 10.

At least for these reasons, independent claim 10 and dependent claim 11 are patentable over the combination of Mehuys, Fox, and Fink.

4. Claim 12 is directed to subject matter similar to claim 1 and is patentable for the same reasons argued above in support of claim 1.

5. Claim 17 is directed to subject matter similar to claim 13 and is patentable for the same reasons argued above in support of claim 13.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is

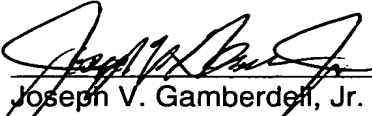
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respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 50-1078.

Respectfully submitted,



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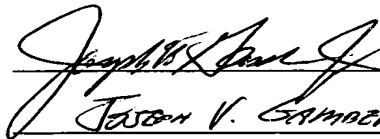
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